BLACK BOX
NETWORK SERVICES

10/100BASE-TX to 100BASE-FX Media Converter

Provides one channel to convert 10BASE-T/
100BASE-TX to 100BASE-FX media.

Use as a standalone device or with a standard 19" rackmount chassis.

Customer Support Information	Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500) • FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746 • Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018 • Web site: www.blackbox.com • E-mail: info@blackbox.com

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Normas Oficiales Mexicanas (NOM)Electrical Safety Statement

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

A: El cable de poder o el contacto ha sido dañado; u

B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

C: El aparato ha sido expuesto a la lluvia; o

D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

E: El aparato ha sido tirado o su cubierta ha sido dañada.

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10/100BASE-TX to 100BASE-FX Media Converter

Table of Contents

1. Specifications

Emissions: FCC Part 15 Class A, CE Mark

Fixed Ports: (1) TX port, (1) FX port

Forwarding Rate: 14,880 pps for 10 Mbps; 148,800 pps for 100 Mbps

Safety: UL® 60950-1

Speed: 10/20 Mbps for half-/full-duplex 10BASE-T; 100/200 Mbps
   for half-/full-duplex 100BASE-TX/FX

Standards: IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX and 100BASE-FX

Switching Method: Store and forward

User Controls: (1) 6-position DIP switch

Connectors: LBMC300-MMST: (1) pair of ST, (1) RJ-45, (1) barrel connector
      for power;
   LBMC300-MMSC: (1) pair of SC, (1) RJ-45, (1) barrel connector for power

Indicators: Per unit: (2) LEDs: Power, 100 Mbps;
   Per port: (2) LEDs: LNK/ACT, FDX/COL

Operating Temperature: 32 to 113° F (0 to 45° C)

Humidity Tolerance: 5 to 95%, noncondensing

Power: External power adapter 0.16 A at 12 VDC;
   Consumption: 1.9 W maximum

Size: 0.9"H x 3.2"W x 4.3"D (2.4 x 8 x 10.9 cm)

2. Overview

2.1 Introduction

LBMC300-MMST and LBMC300-MMSC converters provide one channel for media conversion between 10BASE-T/100BASE-TX and 100BASE-FX. They can be used as a standalone device or with a standard 19″ chassis as shown in Figure 2-1.

An LBMC300-MMST or LBMC300-MMSC media converter provides one TX port and one FX port. For the FX port, you can use multimode fiber cable with an SC or ST connector, depending on the model. The TX port uses one RJ-45 connector and autosenses the 10-/100-Mbps speed.

Port settings are easy via a DIP (Dual Inline Package) switch on the rear panel of the module.
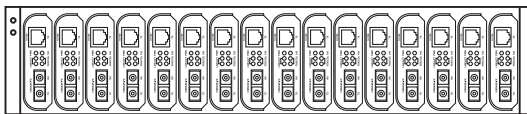

Figure 2-1. Converters installed in a rack.

NOTE: The rack (part number LB300A-RACK) is available separately.

2.2 Features

- Converts one channel between 10BASE-T/100BASE-TX and 100BASE-FX media
- Fiber media can be multimode fiber using SC or ST connectors
- Autonegotiation of speed and duplex mode on TX port
- Auto MDI-X on TX port
- One DIP switch for configuring link-fault-passthrough, fixed speed, and half/full duplex
- 2048 MAC addresses, 768K bits buffer memory
- Store-and-forward mechanism

• Non-blocking full wire-speed forwarding rate

• Support broadcast storm filtering

• Backpressure and IEEE 802.3x compliant flow control

• Front-panel status LEDs

• External AC to DC power adapter

• Used as a standalone device or with a chassis

• Hot-swappable when used with a chassis

2.3 What's Included

Your package should contain the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

• Media Converter

• AC to DC power adapter

• This user's manual

2.4 Hardware Description

2.4.1 Front Panel

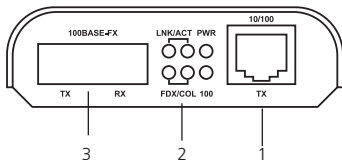Figure 2-2 shows the front panel of the media converter. Table 2-1 describes its components.

Figure 2-2. Front panel.

Table 2-1. Front-panel components.

Number	Component	Description
1	SC or ST connector	Fiber link
2	LEDs	See Table 4-1 in Chapter 4.
3	RJ-45 connector	Twisted-pair link

2.4.2 Back Panel

Figure 2-3 shows the back panel of the media converter. Table 2-2 describes its components.
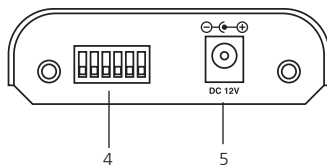

Figure 2-3. Back panel.

Table 2-2. Back-panel components.

Number	Component	Description
4	6-position DIP switch	Configuration
5	Barrel connector	Power

3. DIP Switch Settings

A close-up view of the DIP switches appears in Figure 3-1. Settings for the 6-position DIP switch are described in Table 3-1.
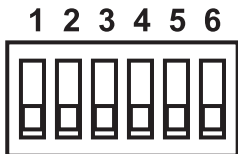

Figure 3-1. DIP switches.

Table 3.1 DIP switch settings.

DIP Switch Number	Down (Default setting)	Up	Description
1	Enable LFPT	Disable LFPT	LFPT = Link-fault passthrough
2	Enable auto-negotiation for TX port	Enable forced mode for TX port	
3	TX port forced to 100 Mbps	TX port forced to 10 Mbps	
4	TX port forced to full-duplex mode	TX port forced to half-duplex mode	
5	FX port forced to full-duplex mode	FX port forced to half-duplex mode	

10/100BASE-TX to 100BASE-FX Media Converter

To set the DIP switches:

1. First, disconnect the converter from the power. Then toggle Pin 2 of the DIP switch to the up position to enable the forced mode for TX port.

NOTE: Pin 2 must be toggled up before setting speed and duplex mode manually.

2. Toggle down Pin 3 to force the TX port at the speed of 100 Mbps. Or toggle up Pin 3 for 10-Mbps speed.

3. Toggle down Pin 4 to force the TX port at full-duplex mode. Or toggle up Pin 4 for half-duplex mode.

4. Toggle down Pin 5 to force the FX port at full-duplex mode. Or toggle up Pin 5 for half duplex mode.

5. Toggle up Pin 1 to disable the link-fault-pass-through.

6. Connect the converter to the power again. The new setting will then take effect.

4. LED Indicators

The LED indicators give you instant feedback on status of the converter.

Table 4-1. LED indicators and their functions.

LED	State	Indication
PWR	Steady	Power on
	Off	Power off
100 (Mbps)	Steady	Connected at 100 Mbps speed
	Off	Connected at 10 Mbps speed
LNK/ACT	Steady	A valid network connection is established
	Flashing	Transmitting or receiving data
	Off	Valid connection not established, and the unit is not transmitting/receiving data
FDX/COL	Steady	Connected in full-duplex mode
	Flashing	Collision occurred
	Off	Connected in half-duplex mode

5. Link-Fault-Passthrough

Connect the FX ports of Media Converters A and B through the fiber cable.

1. Link Fault on the FX port of Media Converter A: A Link Fault condition will be sensed on the TX port whenever Media Converter A detects a Link Fault condition on the FX port. Thus, the 100, LNK/ACT, and FDX/COL LEDs of the TX port of Media Converter A would be off.

2. Link Fault on the TX port of Media Converter A: A Link Fault condition will be sensed on the FX port whenever the media converter detects a Link Fault condition on the TX port. Thus, the 100, LNK/ACT, and FDX/COL LEDs of the TX port of Media Converter A would be off.

   The Media Converter B: A Link Fault condition will be sent to the FX port of Media Converter B. Then a Link Fault condition will be sensed on the TX port of Media Converter B whenever Media Converter B detects a Link Fault condition on the FX port. Thus, the 100, LNK/ACT, and FDX/COL LEDs of Media Converter B would be off.

Table 5-1. Link fault settings.

Link fault on the FX port

LEDs	PWR	100	LNK/ACT	FDX/COL	LNK/ACT	FDX/COL
		TX port			FX port	
Media Converter A	ON	OFF	OFF	OFF	OFF	OFF
Media Converter B	ON	OFF	OFF	OFF	OFF	OFF

Link fault on the TX port

LEDs	PWR	100	LNK/ACT	FDX/COL	LNK/ACT	FDX/COL
Media Converter A	ON	OFF	OFF	OFF	ON	ON
Media Converter B	ON	OFF	OFF	OFF	OFF	OFF

6. Installation

This chapter gives step-by-step installation instructions for the converter.

6.1 Selecting a Site for the Equipment

As with any electric device, you should place the equipment where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

• The ambient temperature should be between 32 and 113 degrees Fahrenheit (0 to 45 degrees Celsius).

• The relative humidity should be less than 95 percent, noncondensing.

• Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards for IEC 8013, Level 2 (3V/M) field strength.

• Make sure that the equipment receives adequate ventilation. Do not block the ventilation holes on each side of the equipment.

• The power outlet should be within 6 feet (1.8 m) of the converter.

6.2 Connecting to Power

This Converter is a plug-and-play device.

Connect the supplied AC to DC power adapter to the receptacle on the rear panel of the converter, and then attach the plug into a standard AC outlet.

6.3 Installing in a Chassis

LBMC300-MMST and LBMC300-MMSC fit into any of the expansion slots on the compatible chassis, LB300A-RACK. Follow the steps described below.

First, install the converter onto a carrier supplied with the chassis:

Step 1: Unscrew the carrier from the desired expansion slot on the chassis.

Step 2: Fit the converter onto the carrier.

Step 3: When the converter is completely seated onto the carrier, insert the carrier to the guide rails of the expansion slot.

Step 4: Carefully slide in the carrier until it is fully and firmly fit in the chassis. Fasten the screws onto the carrier.

NOTE: Never insert any converter into the chassis directly without using the supplied carriers. The carriers enable you to place the converters securely and consistently without damaging them.

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